

## *Shipping of an ECD from a gas chromatograph (GC) at Summit Station, Greenland*

**Primary contact:** Geoff Dutton, NOAA-ESRL (Boulder), Project Manager  
Phone: 303-497-6086, Email: Geoff.Dutton@noaa.gov

**Secondary contact:** Brian Vasel, NOAA-ESRL (Boulder), ESRL RSO  
Phone: 303-497-6655, Email: Brian.Vasel@noaa.gov

**How often:** Seldom, as needed.  
Summer season ONLY (via NY Air National Guard C-130s)  
Only as directed by GC point of contact in Boulder.

**Special requirements:** Appropriate hazardous material (haz-mat) training (DOT & IATA).

**Supplies needed:** Box and labeling in accordance with Title 49 CFR 173.424 requirements.

**Introduction:** Safety is a top priority at NOAA. The NOAA Safety and Environmental Compliance Office (SECO) is the lead organization for safety at NOAA. We want all employees and contractors to "promote a safe and healthy, environmentally responsible, energy efficient work environment". NOAA is involved in world-class measurements and research on ozone depleting, climate or greenhouse, and air quality trace. The electron capture detector (ECD) is one of the most sensitive detectors used to measure atmospheric trace gases containing oxygen, sulfur, fluorine, chlorine, bromine, or iodine atoms. When the ECD is coupled to a gas chromatograph (GC) to separate trace gases from air, this detection method (GC-ECD) is unique for detecting low atmospheric levels of trace gases in the parts-per-billion (ppb, 1 part in  $10^9$ ) and parts-per-trillion (ppt, 1 part in  $10^{12}$ ) ranges. Occasionally, an ECD will need to be shipped from a field site to Boulder for repair. This SOP addresses these rare instances.

### **Procedure:**

1. NOAA instrument technician communicates with GC point of contact and it is determined that the ECD requires shipment to Boulder for inspection and/or repair.
2. The ECD and its housing (or can) will be removed for shipment to Boulder. The can will not be opened on site.
3. **Shipment of an ECD will ONLY occur during the summer months and via the NY Air National Guard C-130 flights. An ECD will NEVER be sent via Copenhagen or Iceland during the winter season (late-August to mid-April) each year.**
4. Summer ECD shipments will be sent from Summit, Greenland to Stratton Air National Guard base in Schenectady, NY via military aircraft. From there, it will be forwarded on to Boulder by National Science Foundation (NSF) contractor and Polar Field Services cargo manger, Earl Vaughn, 518-605-0979, earl.vaughn@gmail.com. Earl will secure the package after removal from the military flight to NY and notify a commercial shipping company (FedEx, DHL, etc.) to pick-up the package for continued shipment on to Boulder.
5. Confirm haz-mat certified shipping contacts for both the shipping party and the receiving party:
  - a. In Boulder, the site haz-mat specialist is Mr. Robert Zook, 303-497-3662, Robert.Zook@noaa.gov.

- b. At Summit, the site haz-mat specialist is the NSF science technician. Each summer the technician is trained prior to deployment.
  - c. At Schenectady, NY, the site haz-mat specialist is Mr. Earl Vaughn, 518-605-0979, earl.vaughn@gmail.com.
6. The haz-mat certified shipper (at Summit Station) will package the ECD and label the box in accordance with NOAA's current NRC authority, Amendment 44 of license # 05-11997-01. Packaging materials provided by NOAA.
- Shipment via appropriate method and in coordination/notification with project POC (Geoff Dutton), ESRL radiation safety officer (Brian Vasel), and Boulder haz-mat specialist (Robert Zook), and NY ANG shipping director (Earl Vaughn) in Albany, NY.

***In no circumstance will an ECD ever be shipped to Boulder without following this established written SOP.***